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PROGRAM

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THE ILLINOIS STUDENT ENGINEERING EXHIBIT

MAY 6, 1939

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PRESENTED BY THE COLLEGE OF ENGINEERING
UNIVERSITY OF ILLINOIS



WELCOME

FACULTY MEMBERS AND STUDENTS of the College of Engineering cordially welcome you to attend the Illinois Student Engineering Exhibit. All of the laboratories of the College will be in operation and students will be present to explain the purposes of the various tests and demonstrations. The exhibits, while entertaining, also will teach you some of the basic principles underlying the field of engineering. We hope that you will enjoy your visit with us and will carry away a favorable impression of our College.

DEAN M. L. ENGER

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THE ILLINOIS STUDENT ENGINEERING EXHIBIT

ENGINEERING HALL

STRUCTURAL ENGINEERING: Models of an elevated railroad girder span, and a railroad truss span. Motion pictures of steel construction, exhibit of work of undergraduate and graduate structural engineering students, pictures of many types of bridges, tanks, and towers. Exhibit of methods now used in timber construction.

WATER POWER: Models of various dams. Pictures of hydraulic developments.

HIGHWAY ENGINEERING: Model of a street intersection showing operation of automatic traffic controls, test of the auto driver's skill, and pictures of current highway work. Demonstration of the effects of highway lighting on traffic signs, and of the methods used in traffic counting. Exhibits of various types of concrete highway joints and methods of finishing concrete road surfaces.

SURVEYING: Surveying instruments, modern as well as old, on display. Demonstration of the use of the plane table in topographic mapping, model of high tower used in triangulation work.

RURAL ELECTRIFICATION: Soil erosion models, farm drainage models, and weed separating machines.

MINING LABORATORY

Demonstrations of diamond drilling and drilling for blasting purposes with compressed air and electric drills, blasting machines, and accessories for firing explosives.

The operation of concentration tables, jigs, magnetic separators, and flotation machines for the concentration of ores, and float-and-sink methods of testing coal.

METALLURGICAL LABORATORY

Demonstrating the microscopic structure of metals and alloys, hardness testing of metals, melting and casting alloys, heat treating of

steels, electro-metallurgy and electro-plating, electric arc welding, and the principles of fire assay of ores for gold and silver.

CERAMICS BUILDING

KILN LABORATORY: Drying equipment; kiln firing; smelting enamels and frits; slagging test of refractories; crushing, grinding, and tempering of clays; brick making.

FIRST FLOOR: Metal enameling; production of ash trays; glaze preparation; clay testing; display of ceramic products; pottery making.

SECOND FLOOR: Ceramic Museum; moving pictures in Room 218; research laboratories; demonstration of use of microscope in ceramic investigations.

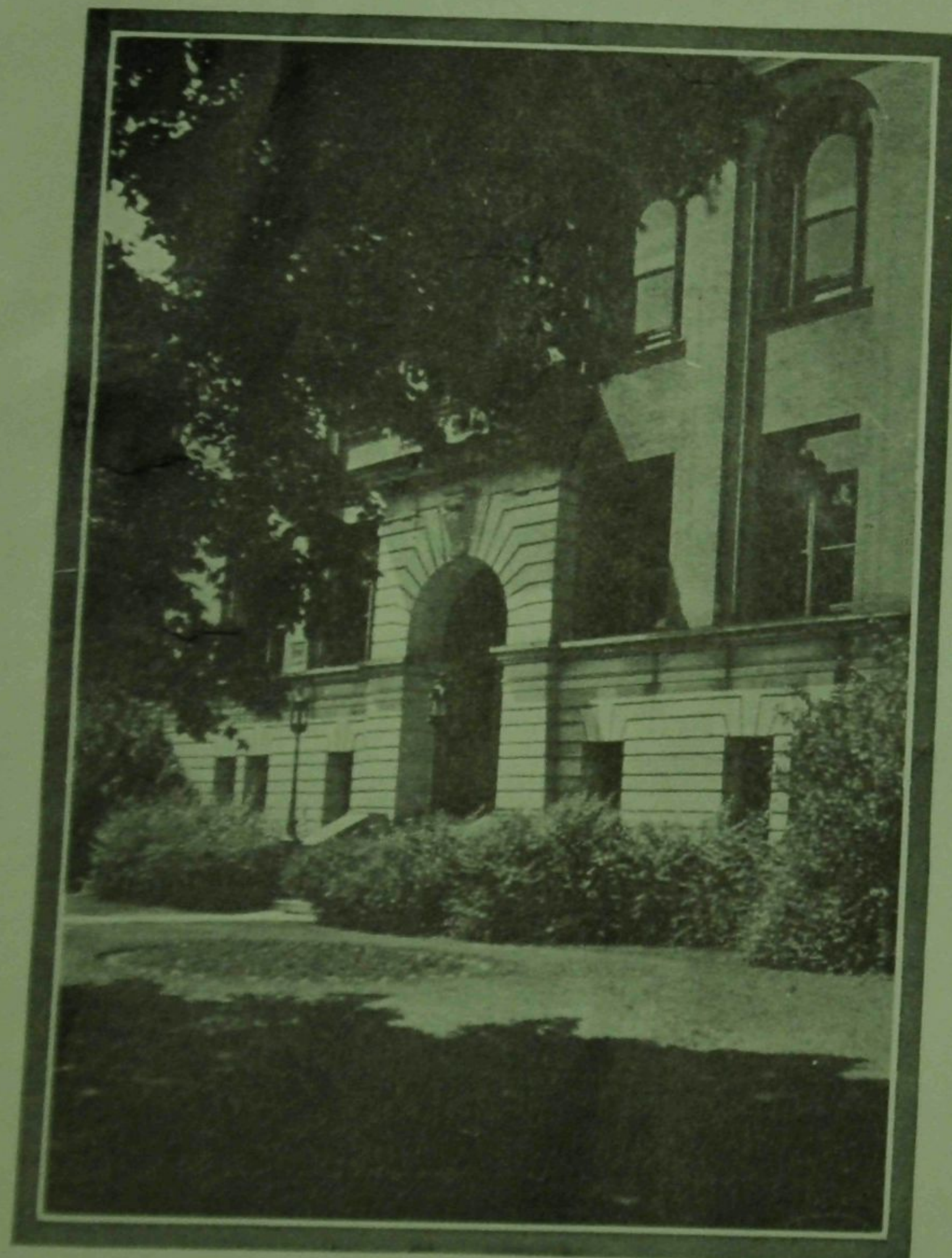
LOCOMOTIVE LABORATORY

An Illinois Central mogul locomotive will be in operation almost continuously throughout the day. Several times during the show the engine will be put through its paces, *i.e.*, tractive effort and fuel consumption tests will be run. Here is an opportunity to see a locomotive operate at normal speed with full load and still not move an inch. Special testing equipment used in research work is also located here.

The electric railway test car is a specially equipped interurban car, which may be moved under its own power, for the purpose of making tests of motor performance and rail bond condition.

Engineering Hall was one of the first engineering buildings to be erected on the University of Illinois campus. In this building is housed all of the College offices, and the main office of the Engineering Experiment Station. On the first and second floors may be found the Engineering Library.

Many engineering graduates carry fond memories of the hours spent in the pursuit of an education under the roof of this building. Engineering Hall serves as the center of many engineering student activities. The Illinois Technograph has its office here, and many Departmental Societies hold their meetings in its lecture rooms.



TRANSPORTATION BUILDING

FIRST FLOOR: Sections of various types and weights of steel rails, models of locomotive valve gears and standard car couples, railway signal and automatic block models.

THIRD FLOOR: Display of elementary drawings, advanced drawings, architectural projections and descriptive geometry.

Display of large size and attractively colored models of conic and cylindrical intersections.

Air-brush display and demonstration showing color, tone shading, rendering as applied to engineering.

Display of N.Y.A. Project No. 23 in operation. Display of completed work such as maps for "The Study of Local School Units."

Demonstration of various types of lettering pens, irregular curves, the pantograph, Wrico lettering aids, section liners, the ellipsograph, Universal drafting machine, beam compasses, and power erasers. A continuous demonstration of the reproduction of engineering drawings by the blue print, Van Dyke, ozalid, photostatic and zinc etching methods.

POWER PLANT

See large boilers in operation, and the coal burning in them! Turbo-alternators, air compressors, pumps in operation.

POWER LABORATORY

Demonstration and display of instructional equipment: Belt testing dynamometer, fans, pumps, Corliss steam engine, Diesel oil engine. See the new, modern air-conditioning apparatus that heats or cools the air as desired.

CHEMICAL ENGINEERING EXHIBIT (in Power Laboratory)

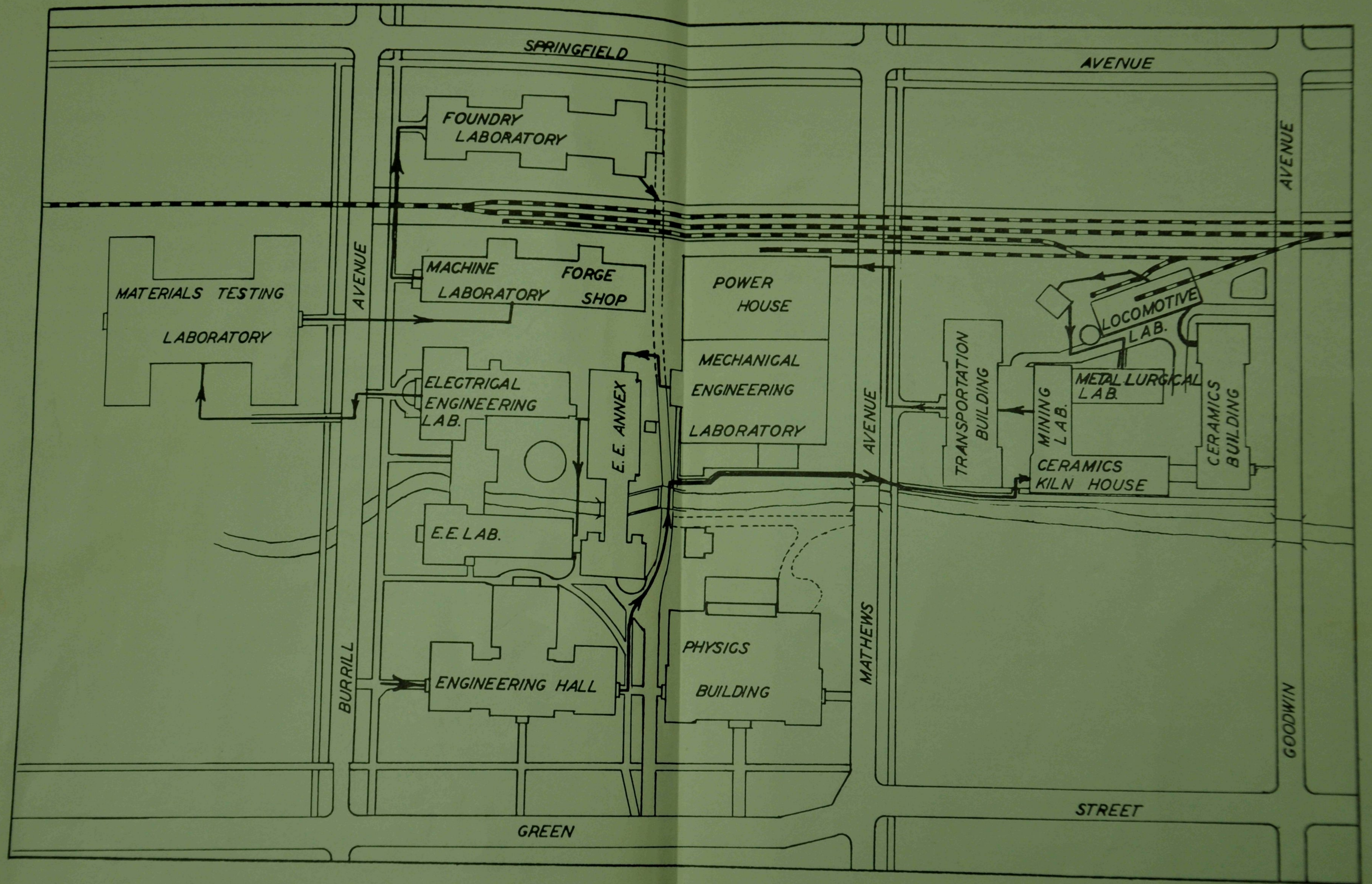
Halitosis meter—for determining the presence or absence of halitosis.

Demonstrations of distillation, extraction, double-effect evaporation, and heat transfer.

SEE—The Duck That Can't Swim. The Ammonia Fountain and Phosgene Smoke Rings.

ELECTRICAL ENGINEERING BUILDING

ELECTRONICS LABORATORY: Phase power control by thyratrons in conjunction with photo-tubes, model of a D.C. transmission line, transmission of music over a light beam, operation and demonstration of



uses of stroboscope, talking tape, cathode ray tube in conjunction with two oscillators, speed meter, speech inverter.

DYNAMO LABORATORY: Bucking broncho (unstable operation of motors), mercury arc rectifier in conjunction with a cathode ray oscillograph, demonstration of D.C. Motor principles, demonstration of A.C. Motor principles, demonstration of different types of motors, operation of alternators in parallel, automatic telephone exchange.

HIGH VOLTAGE LABORATORY: Power tubes, power bridges, high voltage corona discharges.

RADIO LABORATORY: 75 watt transmitter, crystal clock, radio frequency standards, measuring instruments, television apparatus, Houdin resonator.

METER LABORATORY: Appliance cost meter, testing of meters, interesting facts concerning house meters.

COMMUNICATION LABORATORY: Tones from harmonics in 60 cycle commercial power, protection equipment in local phone systems.

ILLUMINATION LABORATORY: Demonstration of modern lighting methods.

CALIBRATION LABORATORY: Methods of indicating meter testing.

RESEARCH LABORATORY: Photo-tubes and high voltage discharges in gas.

ARTHUR NEWELL TALBOT LABORATORY

MAIN CRANE BAY: One 20" x 48" concrete cylinder will be tested every hour, on the half hour, in the 3,000,000-pound testing machine. See the machine at work testing welded joints used in building construction. Reinforced concrete slabs for bridge floors are being tested under concentrated loads in cooperation with the U. S. Bureau of Public Roads and the Illinois Division of Highways. Research apparatus for detection of cracks and fissures in steel rails (this work is for the purpose of preventing railroad wrecks caused by broken rails).

HYDRAULIC LABORATORY: Centrifugal pumps to furnish water for the hydraulic laboratory. Pumps, water motors and turbines, test meters and other apparatus for the study of the flow of water, all in operation. Apparatus for the study of the flow of water through a glass pipe. Model of spillway for flood protection of dam near Centralia, Illinois.

SANITATION LABORATORY: Views of living microscopic organisms

in water. Intermittent sand filter. Demonstration of agricultural value of sewage sludge.

MATERIALS LABORATORY: Testing machines and apparatus, for measuring the physical properties of materials, in continuous operation. Tension and torsion tests of steel, compression tests of wood, tests of cloth and wire, effects of temperature on the strength of steel, tests of stone, bituminous material and the bearing power of soils.

REPEATED STRESS AND PHOTOELASTIC LABORATORIES: See the laboratories devoted to repeated stress research and the metallographic study of fissures in rails; also the lead investigation. See the latest developments in photoelastic research on models of aeroplane parts. How do machine parts act when subjected to vibration?

SANITARY ENGINEERING: Model of a modern sewage treatment plant, demonstration of the use of sludge as a fertilizer, model of intermittent sand filter equipped with dosing tank, microscopic views of living water organisms, and the extraction of water from the air.

CONCRETE LABORATORY: Demonstration and display of the instructional equipment for testing portland cement, aggregates, and concrete.



ARTHUR NEWELL TALBOT LABORATORY

MACHINE LABORATORY

See a gas engine so small that you can hold it in your hand while it operates at 5,000 revolutions per minute, automatic screw machines, hand screw machines, engine lathes, drilling machines (operated by engineering students).

HEAT TREATMENT LABORATORY

See tool steel quenched from 2400 degrees Fahrenheit, so hot it would burn ordinary metal. Watch steel wire expand, contract, and harden in air as it passes through the critical temperature.

FOUNDRY LABORATORY

Get a souvenir Lincoln head paper weight in the Foundry Laboratory. Molten brass and aluminum melted in crucible will be poured every hour until evening. At 7:00 p.m. molten gray iron will flow from the cupola and be poured into sand molds.

See the welding of metals, the fabrication of machine parts by welding, and how easily steel may be cut with a torch.

AGRICULTURAL ENGINEERING

(North of E. E. Building)

See Agricultural Engineers' Farm Machinery Exhibit with a tractor testing dynamometer in operation, an ultra-modern farm tractor fully equipped with cab, radio, lights, heater, starter, and windshield wipers.

Also, small machinery designed for small farms. Part of this exhibit will be surrounded by an intermittent electric fence.

Curricula Offered in the College of Engineering

THE CURRICULA of the College of Engineering are extensive and varied and permit a wide range of choice as well as an opportunity for genuine specialization, particularly, in the realm of graduate work. Cultural subjects are interwoven with the theoretical and technical subjects of the several departments. The instruction of the classroom and the practice afforded by the library, the drafting room, and the laboratory, are thoroughly correlated. Throughout the course, the students work on problems and proceed by methods similar to those arising in the experience of the practicing engineer. The curricula of the college are as follows:

1. Curriculum in Agricultural Engineering, with Options in Machinery and Power, and in Construction and Drainage.
2. Curriculum in Ceramic Engineering, with an Option in Ceramic Engineering Administration.
3. Curriculum in Ceramics (Designed especially for ceramic chemists).
4. Curriculum in Civil Engineering, with Options in Highway, Hydraulic, Sanitary, and Structural Engineering, and in City Planning.
5. Curriculum in Electrical Engineering, with Options in Electrical Power Machinery and in Communications.
6. Curriculum in Engineering Physics.
7. Curriculum in General Engineering.
8. Curriculum in Mechanical Engineering, with an Option in Petroleum Production Engineering. (Emphasis is given to Refrigeration, Aeronautics, Heating and Ventilation, and Heat Engines through technical electives in the regular curriculum).
9. Curriculum in Metallurgical Engineering.
10. Curriculum in Mining Engineering, with Options in Coal Mining, Ore Mining, Mining Geology, and Mine Administration.
11. Curriculum in Railway Civil Engineering.
12. Curriculum in Railway Electrical Engineering.
13. Curriculum in Railway Mechanical Engineering.

Additional information will be supplied on request.

Dean—Melvin L. Enger, 105 Engineering Hall
Associate Dean—Harvey H. Jordan
300 Engineering Hall

FEATURE EXHIBITS

You can't afford to miss these!

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1. Every hour, on the half hour, a concrete cylinder will be tested to destruction in the 3,000,000-pound testing machine, the world's second largest. In the Materials Testing Laboratory main crane bay.
2. Kilns will be fired continuously in the Ceramics Building and brick making will be demonstrated and explained.
3. A full sized locomotive travelling at normal speed and yet not moving an inch may be seen throughout the day.
4. Don't miss the gas engine so small that it can be held in one hand while it is running at 5000 revolutions per minute in Machine Tool Laboratory.
5. Every hour during the afternoon you will be able to see molten metal being poured and will be presented with a Lincoln head souvenir. Foundry.
6. In Engineering Hall can be found a model of Boulder Dam complete in every detail. See how this gigantic project is planned.
7. Frequent exhibits of direct current high voltage corona discharges may be witnessed in the Electrical Engineering Annex.
8. In the Mechanical Engineering Laboratory be sure to see the air conditioning apparatus in operation.
9. Be sure to see the steel being quenched in the Heat Treatment Laboratory.
10. See frequent demonstrations of new types of lighting equipment and methods in the Illumination Laboratory.
11. Continuous showing of motion pictures of modern construction in room 319 Engineering Hall.
12. Movies, lectures, and demonstrations in Room 218 Ceramics Building.

I.S.E.E. HEADQUARTERS . . . 106 ENGINEERING HALL

University Phone—6131

For information, guides, lost and found, bureau of missing persons, etc., inquire in this room. Also see I. S. E. E. officials at any part of the show.